

## Claims

1. A method of handoff of a virtual channel or path connection of a mobile terminal in a wireless ATM networks under the control of a connection manager  
5 comprising the steps of:  
transmitting a sequence of handoff messages between the mobile terminal and the connection manager;  
executing a sequence of operations by the connection manager for re-routing the virtual connection; and wherein the re-routing of a downstream connection  
10 is scheduled using a timer.
2. A method as claimed in claim 1 wherein the re-routing comprises the steps of establishing a make segment and deleting a break segment and the timer schedules the make segment to be established before, after or at the  
15 same time as the break segment is deleted.
3. A method as claimed in claim 2 wherein the timer schedules the make segment to be established before the break segment is deleted if an application using the virtual connection can tolerate data duplication.  
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4. A method as claimed in claim 2 wherein the timer schedules make segment to be established after the break segment is deleted if an application using the virtual connection can tolerate data loss.

5. A method as claimed in claim 2 wherein the timer based re-routing occurs from the point at which the make and break segments meet.

6. A method as claimed in claim 1 wherein the timer schedules the re-  
5 routing in dependence upon application requirements and quality of service of the connection.

7. A method as claimed in claim 1 wherein the timer schedule for re-routing is estimated based on the time taken for switching of the route.  
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8. A method as claimed in claim 7 wherein the estimate of time taken includes the time taken for the mobile terminal to switch an RF carrier following re-routing.

15 9. A method as claimed in claim 1 wherein the transmitting step includes:

(a) the mobile terminal sends a handoff request message to the connection manager via a first access point, indicating the quality of service of the connections and the list of access points to which the  
20 connections could be handed off;

(b) the connection manager selects one of the access points as a new access point;

(c) the connection manager obtains an optimal route to the new access point from a route manager and computes a crossover switch, make segment, and break segment for all upstream and downstream connections;

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(d) the connection manager instructs the new access point to start buffering the data on the downstream connection;

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(e) the connection manager confirms the backward handoff with the mobile terminal, indicating the new access point;

(f) the mobile terminal sends a handoff detachment message to the connection manager, via the first access point;

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(g) the connection manager allocates the network resources at the switching nodes and access points along the make segment and sets up the connection, for the downstream connection;

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(h) the connection manager de-allocates the network resources at the switching nodes and access points along the break segment and deletes the connection, for the downstream connections;

(i) the connection manager allocates the network resources at the switching nodes and access points along the make segment and sets up the connection, for the upstream connections;

5 (j) the connection manager de-allocates the network resources at the switching nodes and access points along the break segment and deletes the connection, for the upstream connections;

10 (k) the connection manager confirms the handoff detachment with the mobile terminal;

(l) the mobile user terminal sends a handoff attachment message to the connection manager, via the new access point;

15 (m) the connection manager updates the location of the mobile user terminal with the route manager;

(n) the connection manager instructs the new access point to start transferring the buffered data to the mobile terminal; and

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(o) the connection manager confirms the handoff attachment with the mobile terminal.

10. A method as claimed in claim 9 the connection manager uses the timer to trigger the allocation of the network resources at the switching nodes and access points along the make segment and setting up the connection, for the downstream connections

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11. A method as claimed in claim 10 wherein the time out value of the timer is chosen based on the time of disconnecting the break segment, the cell loss requirement of the application and the time elapsed between receiving the hand off detachment message and the handoff attachment message.

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12. A method as claimed in claim 9 wherein the connection manager uses the timer to trigger the allocation of network resources at the switching nodes and access points along the break segment and delete the connection for the downstream connections.

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13. A method as claimed in claim 9 wherein the connection manager uses the timer to trigger the allocation of the network resources and connection setup of the make segment only at the crossover switch, the allocation and connection setup at all other nodes of the make segment being effected immediately after receiving the hand off detachment message.

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